



IN THE CLAIMS:

Please amend the claims as follows.

1. (Currently Amended) A gas separation apparatus for separating at least one two specific gas from a gas to be treated which contains a plurality of specific gases, said apparatus comprising:

a first separator for separating said gas to be treated into gas groups having different boiling points by distillation separation; and

a second separator for separating the at least one two specific gases by performing chromatographic separation on at least one gas group separated by said first separator,

wherein the second separator comprises a plurality of chromatographic columns,

wherein the plurality of chromatographic columns each comprises at least one inlet valve and a plurality of outlet valves arranged such that the at least one gas group is sequentially supplied to the plurality of chromatographic columns by switching at least one inlet valve and the at least one two specific gases is are sequentially collected from the plurality of chromatographic columns by switching the plurality of outlet valves,

wherein, for at least one of the plurality of chromatographic columns, the plurality of outlet valves comprises a first outlet valve, a second outlet valve, and a third outlet valve,

wherein, the first outlet valve discharges a first gas of the at least two specific gases, the second outlet valve discharges a second gas of the at least two specific gases, and the third outlet valve discharges a mixture gas of the at least two specific gases.

2. (Original) A gas separation apparatus according to claim 1, wherein said second separator chromatographically separates a plurality of specific gases having similar boiling points.

3. (Original) A gas separation apparatus according to claim 1, wherein said gas to be treated contains PFC specific gases discharged from a semiconductor manufacturing process as the specific gases and nitrogen as another gas.

4. (Original) A gas separation apparatus according to claim 3, wherein said PFC gases contain fluorine compounds having at least one element of C, N, and S as the constituting element.

5. (Original) A gas separation apparatus according to claim 3, wherein said PFC gases include at least CF_4 and NF_3 .

6. (Original) A gas separation apparatus according to claim 5, wherein said CF_4 and NF_3 are separated into the same gas group at said first separator and are separated from each other at said second separator.

7. (Original) A gas separation apparatus according to claim 4, wherein said PFC gases include at least C_2F_6 and CHF_3 .

8. (Original) A gas separation apparatus according to claim 7, wherein said C_2F_6 and CHF_3 are separated into the same gas group as said first separator and are separated from each other at said second separator.

9. (Currently Amended) A gas separation apparatus according to claim 1, wherein the plurality of chromatographic columns are supplied with a feed gas which is sequentially switched among the plurality of chromatographic columns thereby sequentially changing the function of each column, wherein the feed gas is a mixture of the at least one gas group and the mixture gas of the at least two specific gases.

10. (Currently Amended) A gas separation method for separating at least one two specific gases from a gas to be treated containing a plurality of specific gases, said method comprising the steps of:

a first separation step for separating said gas to be treated into gas groups having different boiling points by distillation separation; and

a second separation step for separating the at least one two specific gases by

performing chromatographic separation on at least one gas group that is separated through distillation at the first separation step,

wherein the second separation step comprises sequentially supplying a plurality of chromatographic columns with the at least one gas group by switching an inlet valve for each of the plurality of chromatographic columns and sequentially collecting the at least ~~one~~ two specific gases from the plurality of chromatographic columns by switching a plurality of outlet valves,

wherein, for at least one of the plurality of chromatographic columns, the plurality of outlet valves comprises a first outlet valve, a second outlet valve, and a third outlet valve,

wherein, a first gas of the at least two specific gases is collected from the first outlet valve, a second gas of the at least two specific gases is collected from the second outlet valve, and a mixture gas of the at least two specific gases is collected from the third outlet valve.

11. (Original) A gas separation method according to claim 10, wherein in said second separation step, a plurality of specific gases having similar boiling points are chromatographically separated.

12. (Original) A gas separation method according to claim 10, wherein said gas to be treated contains PFC gases discharged from a semiconductor manufacturing process as the specific gases and nitrogen as another gas.

13. (Original) A gas separation method according to claim 12, wherein said PFC gases include fluorine compounds having at least one element of C, N, and S as the constituting element.

14. (Original) A gas separation method according to claim 13, wherein said PFC gases include at least CF_4 and NF_3 .

15. (Original) A gas separation method according to claim 14, wherein said CF_4 and NF_3

are separated into the same gas group at said first separation step and are separated from each other at said second separation step.

16. (Original) A gas separation method according to claim 13, wherein said PFC gases include at least C₂F₆ and CHF₃.

17. (Original) A gas separation method according to claim 16, wherein said C₂F₆ and CHF₃ are separated into the same gas group at said first separation step and are separated from each other at said second separation step.

18. (New) A gas separation apparatus according to claim 1, wherein, for the at least one of the plurality of chromatographic columns, the plurality of outlet valves comprises a fourth outlet valve, wherein the fourth outlet valve discharges a carrier gas.

19. (New) A gas separation apparatus according to claim 1, wherein the mixture gas is returned to an inlet of the at least one of the plurality of chromatographic columns.

20. (New) A gas separation method according to claim 10, wherein, for the at least one of the plurality of chromatographic columns, the plurality of outlet valves comprises a fourth outlet valve, wherein a carrier gas is collected from the fourth outlet valve.

21. (New) A gas separation method according to claim 10, wherein the mixture gas is returned to an inlet of the at least one of the plurality of chromatographic columns.